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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,604	03/11/2004	Duk-min Yi	SEC.1066	3882

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EXAMINER

QUINTO, KEVIN V

ART UNIT PAPER NUMBER

2826

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

4.8

Office Action Summary	Application No. 10/797,604	Applicant(s) YI ET AL.	
	Examiner Kevin Quinto	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,19-26 and 34-39 is/are allowed.
- 6) ☒ Claim(s) 3,11,27-33 is/are rejected.
- 7) ☒ Claim(s) 4-10 and 12-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: *761c in figure 7(a), all reference numbers in figure 7(b), a line without a reference number in figure 8(a)*. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 27-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 27 recites the limitation "said array of source/drain regions" in line 20, p.31 of the disclosure filed March 11, 2004. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 3 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsing et al. (USPN 5,517,046).

7. In reference to claim 3, Hsing et al. (USPN 5,517,046, hereinafter referred to as the "Hsing" reference) discloses a similar device. Figures 4 and 5 each illustrate a device which meets the limitation of claim 3. Figure 6 illustrates a plan view which applies to both figures 4 and 5. Figures 4 and 5 of Hsing each illustrate a semiconductor device with a mesh-shaped gate electrode (26) located over a surface of a substrate (20). The mesh-shaped gate electrode (26) has a plurality of openings aligned over respective source/drain regions (32, 34) of the substrate (20). A gate dielectric layer (24) is interposed between the mesh-shaped gate electrode (26) and the surface of the substrate (20). At least one oxide region (33) is located in the substrate (20) below the mesh-shaped gate electrode (26). A thickness of the oxide region (33) is greater than that of the gate dielectric (24).

Art Unit: 2826

8. With regard to claim 11, the oxide region (33) is a field oxide region.

9. Claims 27, 28, 32, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsing et al. (USPN 5,517,046).

10. So far as understood in claim 27, Hsing (USPN 5,517,046) discloses a similar device. Figures 4 and 5 each illustrate a device which meets the limitation of claim 19. Hsing makes it clear that figure 8 is nearly identical but also illustrates a plan view which applies to both figures 4 and 5 (column 6, lines 51-55). Figures 4 and 5 of Hsing each illustrate a semiconductor device with a mesh-shaped gate electrode (26) located over a surface of a substrate (20). The mesh-shaped gate electrode (26) has a plurality of openings aligned over respective source/drain regions (32, 34) of the substrate (20). A gate dielectric layer (24) is interposed between the mesh-shaped gate electrode (26) and the surface of the substrate (20). At least one oxide region (33) is located in the substrate (20) below the mesh-shaped gate electrode (26). A thickness of the oxide region (33) is greater than that of the gate dielectric (24). Figure 7 shows another cross-section of the device. A dielectric layer (47) is formed over the semiconductor substrate (20) and the mesh-shaped gate electrode (26). There is a plurality of elongate drain electrodes (54) which are located over the dielectric layer (47) and extend parallel to each other and diagonally over the source/drain regions (32, 34). There is a plurality of elongate source electrodes (52) which are located over the dielectric layer (47) and extend parallel to each other and diagonally over the source/drain regions (32, 34). The source electrodes (52) and the drain electrodes (54) are alternately arranged over the dielectric layer (47).

Art Unit: 2826

11. With regard to claim 28, the oxide region (33) comprises an array of oxide regions located below the gate intersection regions of the mesh-shaped gate electrode.
12. In reference to claim 32, the elongate source electrodes (52) and the elongate drain electrodes (54) are coplanar.
13. With regard to claim 33, the oxide region (33) is a field oxide region.

Allowable Subject Matter

14. Claims 1, 2, 19-26, and 34-39 are allowed.
15. Claims 4-10 and 12-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
16. The following is a statement of reasons for the indication of allowable subject matter: the examiner is unaware of any prior art which suggests or renders obvious a field effect transistor using a mesh type gate, a mesh type electrode for the source or drain formed over a first dielectric layer and another mesh type electrode for the source or drain formed over a second different dielectric layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

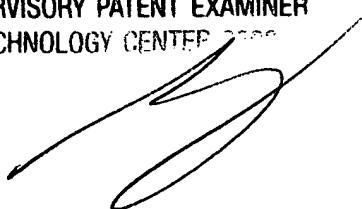
Art Unit: 2826

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KVQ

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2826

A handwritten signature in black ink, appearing to be 'Nathan J. Flynn', written over the printed name and title.